

works most biologists will be able to locate readily in any good library.

From original sources he has redrawn pertinent figures or reproduced photographs or drawings helpful to a better understanding of the text.

Particularly thorough are his sections on bees and birds. Knowledge of homing in dogs is to be found principally in German and Dr. Carthy's transliteration is faithful.

Most fishery scientists will know more about salmon and eel migration than Dr. Carthy relates in 16 pages.

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ENDOCRINE CONTROL IN CRUSTACEANS. By David B. Carlisle and Sir Francis G. W. Knowles. Cambridge University Press, London. 1959. 120 pp., 18 figs., 5 plates. \$3.75.

In these days of increasing commercial interest in crustacea, it is encouraging to find parallel scientific interest. Indications of increasing scientific concern are found both in this volume and in the more recently published *Crustacea* (T. H. Waterman, ed., Academic Press). Although neither volume is slanted toward the commercial fisheries, the basic physiology presented in both may well yield clues that will eventually increase crustacean fisheries.

The neurosecretory system of the head and thorax; color changes; the pericardial organs and heart beat; growth, molting, development, and metabolism; sex—all are presented clearly and succinctly. The historical approach is followed, beginning with the work of Perkins and of Koller who independently found in 1928 that color changes in decapods are regulated by substances circulating in the blood. Some confusing terms of earlier authors have been clarified (the "x-organ" of Hanstrom and the medulla terminalis "x-organ" of later workers), and phylogenetic relationships of the endocrine systems in crustacea are summarized. The figures and color plates (of exceptional quality) do much to aid the reader in understanding.

To those of us especially interested in shrimp, it may be noted that *Penaeus* is mentioned only once—in studies of *Penaeus braziliensis* for the purpose of correlating physiological activity with histological structure of the post-commisural organs. This is not to speak slightingly of Knowles and Carlisle, but rather to emphasize how few basic physiological data are available concerning Texas' most important commercial species.

Not only is past work well described, but some of the problems yet to be solved are defined. For example, the classic ablation experiments of vertebrate endocrinology are not useable in many cases because of the amount of nervous tissue that must be removed.

"We believe that in the study of neurosecretory systems new standards may have to be de-

vised, and that they will probably rest mainly on the correlation of histologically observable changes to experimentally altered conditions, considered in relation to the identification of active substances in extracts of the suspected secretory tissues and the effects of these substances on target organs." (p. 59)

and the relationships of metabolism and molting.

"... it would be well to consider some of the metabolic processes which change throughout the moult cycle and which appear to be under normal control. Since these changes are so closely associated with the moult cycle, it may seem probable that their control is by means of the same hormones which regulate the moult cycle, but there is no guarantee of this and we have not the information available to decide the question." (p. 87)

The authors suggest that much can be done in the fourth decade of crustacean endocrinology with studies of organ structure by the electron microscope and by the biochemical investigation of hormones.

"Finally is it too much to hope that by combining our increasing knowledge of crustacean hormones with the data of insect and vertebrate endocrinology we may perhaps eventually obtain some insight into the basic nature of hormones and their evolution?"

The bibliography of 13 pages includes the pertinent references through 1957, and the volume is concluded with a comprehensive index. Altogether this volume can be heartily recommended to all interested in crustacea and to endocrinologists, both vertebrate and invertebrate.

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RECENT PUBLICATIONS

Bird, Esteban A.

FISHING OFF PUERTO RICO. A. S. Barnes and Co., New York. 1960. \$3.95.

Brown, Edward H., Jr.

LITTLE MIAMI RIVER HEADWATER—STREAM INVESTIGATIONS. Ohio Department of Natural Resources, Division of Wildlife, Columbus, Ohio. 1960. 143 pp.

Gordon, Bernard L.

A GUIDE BOOK TO THE MARINE FISHES OF RHODE ISLAND. The Book and Tackle Shop, Watch Hill, Rhode Island. 1960. 136 pp. \$4.00.

Gosline, William A., and V. E. Brock

HANDBOOK OF HAWAIIAN FISHES. University of Hawaii Press, Honolulu, Hawaii. 1960. 372 pp. \$11.00.